[0109] In the high-voltage power transmission lines, the power transmission loss may be reduced by using the multiple divided cables in which the electric power is transmitted, such as four divided cables, or three divided cables, or two divided cables.

[0110] In an embodiment, optionally, the electric vehicle may be used for routing inspection along the two divided cables of 220V power transmission lines.

[0111] In another embodiment, optionally, the electric vehicle may be used for routing inspection along the four divided cables of 500V power transmission lines. Preferably, in this case, the two running mechanisms are running on two parallel upper cables (same or different in elevation/height), respectively, of the four divided cables.

[0112] In an embodiment, optionally, the two running mechanisms are running on two parallel upper cables (same or different in elevation/height), respectively, of the four divided cables, and a protection structure, such as a protection bar or a protection rope for example, may be provided between a rim of the hanging seat and the cable(s) (such as the upper cables or the lower cables) of the four divided cables. Therefore, when the vehicle body is damaged or broken, the protection structure can provide additional safety protection for the operator(s) in the hanging seat. The protection structure in an embodiment may be connected to the cable by a connecting ring through which the cable can pass to avoid interference to the running of the electric vehicle. Preferably, the connecting ring is detachable from the cable.

[0113] In an embodiment, optionally, the electric vehicle may comprise a safety rope with its lower end drooping down to the hanging seat such that the operator may attach himself/herself to the safety rope during running of the electric vehicle for improving operation safety. The upper end of the safety rope may be fixed to the running mechanism (such as the cross beam thereof for example) or to the vehicle body of the electric vehicle.

[0114] Optionally, in any embodiment of the present invention, the cam may be replaced by a circular eccentric wheel. By configuring the size and the rotation center of the circular eccentric wheel according to the practical requirements, the same/similar function to the cam can be achieved for assisting obstacle crossing.

[0115] FIG. **1** is a structural diagram of a running mechanism of an electric vehicle for routing inspection of power transmission lines according to an embodiment of the present invention, wherein a normal running state is shown.

[0116] FIG. **2** is a structural diagram of a running mechanism of an electric vehicle for routing inspection of power transmission lines according to an embodiment of the present invention, wherein an obstacle crossing state is shown.

[0117] As shown in the embodiments in FIGS. **1** and **2**, the running mechanism comprises:

[0118] a front wheel **520** (a respective driving motor **525** is also shown in the figure) and a rear wheel **510** (a respective driving motor **515** and a respective rotation shaft **511** are also shown in the figure) connected by a cross beam **540** and rolling on the cable **900**, the front and rear wheels each having an annular groove on its circumferential rim for receiving the cable therein;

[0119] the cross beam **540** connected between the front wheel **520** and the rear wheel **510**;

[0120] an obstacle sensor **530** directing forward (directing to the right in the figure) with respect to the front wheel **520** (in an embodiment, the obstacle sensor may be disposed on the front wheel **520** or its support structure); and

[0121] a cam **550** rotatably mounted to the cross beam **540** (a respective driving motor **555** and a respective rotation shaft **551** are also shown in the figure), the cam **550** rotating to roll onto the cable after an obstacle is detected on the cable within an effective range in front (on the right in the figure) of the front wheel by the obstacle sensor **530**, to support a front portion (the right portion in the figure) of the cross beam **540** upwards such that the front wheel **520** is raised to a position above the cable (as shown in FIG. **2**, for example), and the cam **550** continuing rolling on the cable after the front wheel passes the obstacle such that the front portion of the cross beam **540** falls back downwards and the front wheel **520** then falls back onto the cable (as shown in FIG. **1**, for example)

[0122] FIG. **3** is a structural diagram of an electric vehicle for routing inspection of power transmission lines, after it is mounted to the cable, according to an embodiment of the present invention.

[0123] FIG. **4** is a structural diagram of an electric vehicle for routing inspection of power transmission lines, before it is mounted to the cable, according to an embodiment of the present invention.

[0124] As shown in the embodiments in FIGS. **3** and **4**, the electric vehicle is mounted onto the cable by two hanging arms, wherein:

[0125] each of the hanging arms **710**, **720** has a lower end mounted to the body and an upper end extending upwards to above the cable(s) **901**, **902** for mounting the running mechanism, at least one of the hanging arms is movable (such as the hanging arm **720** shown in FIG. **2**), with its lower end **722** rotatably mounted to the body such that the two hanging arms can rotate with respect to each other to be in a close state or an open state, wherein in the close state, the front and rear wheels of the two running mechanisms are mounted and positioned on the two parallel cables by the upper ends **721** of the hanging arms, and optionally the two hanging arms may be locked with respect to each other by the locking means.

[0126] FIG. **5** is a side view of an electric vehicle for routing inspection of power transmission lines according to an embodiment of the present invention.

[0127] As shown in the embodiment in FIG. **5**, an electric vehicle for routing inspection of power transmission lines is provided, used for routing inspection along multiple divided cables of high-voltage power transmission lines, comprising:

[0128] a body;

[0129] a running mechanism **500** mounted to the body, comprising a front wheel **520** and a rear wheel **510** connected by a cross beam **540** and rolling on the cable **920** (indicated by horizontal dashed lines in the figure), the front and rear wheels **520**, **510** each having an annular groove on its circumferential rim for receiving the cable therein; an obstacle sensor (not shown) directing forward (directing to the right in the figure) with respect to the front wheel **520**; and a cam **550** rotatably mounted to the cross beam **540**, the cam **550** rotating to roll onto the cable after an obstacle is detected on the cable within an effective range in front (on the right in the figure) of the front wheel by the obstacle sensor, to support a front portion (the right portion in the figure) of the cross beam **540** upwards such that the front wheel **520** is raised to a position above the cable (as shown